

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF AERONAUTICS AND ASTRONAUTICS
INSTRUMENTATION LABORATORY FIELD SITE
EASTERN TEST RANGE

C. S. DRAPER
DIRECTOR

Serial: 8-13
File: 07.7
Date: 12 March 1968

National Aeronautics and Space Administration
Manned Spacecraft Center
Houston, Texas 77058

Attention: Mr. W. Kelly
Project Office (PP 7)
Guidance and Navigation
Apollo Spacecraft Program Office

Through: NASA/RASPO Office at KSC

Subject: Procedure for Earth Rate Compensation for MSC
Simulation Laboratory Testing using SUNDISK 282

Gentlemen:

Personnel of the MSC Simulation Laboratory requested a procedure to Earth stabilize the IMU which was mounted in a unique manner during DAP testing. The procedure has been developed and is enclosed. (MIT/IL/KSC letter, Serial 8-11, File 7.7).

The restrictions on parallel operation of certain flight programs and this ER compensation program is due to shared E memory within the ground test and flight programs. The test plan as described to this office did not include any conflicting programs.

Further assistance on this subject can be obtained from the MIT/MSC personnel (ext. 6494) or this office.

This procedure is of particular interest to Mr. Charles Brady, EG 25, Bldg. 16.

Very truly yours,

George L. Silver
George L. Silver
Technical Operations Director
MIT/KSC

Enclosure
GLS:bgw
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Date: 8 March 1968

MEMO TO: G. Silver
FROM: R. Gilbert
SUBJECT: Earth Rate Stabilization for MSC SIM LAB DAP Testing

The enclosed procedure is based upon the following assumptions:

1. The NAV BASE is mounted with XNB NORTH, YNB UP, and ZNB EAST.
2. OPTICS POWER can be turned on even though the OPTICS MODE switch can be left in ZERO OPTICS.
3. It is adequate to align the stable member to gimbal angles of 0,0,0.
4. There are no requirements to run any of the PXX flight programs. R63 (V89) and R62 (V49) should be able to be utilized to exercise the DAP.
5. It is desired to align the stable member and keep it earth referenced via gyro torquing commands.
6. Gyro drifts will not be compensated for in the gyro torquing.

The stable member should be aligned using this procedure and earth rate compensation observed by the continuous flashing of the COMPUTER ACTIVITY light before DAP testing is initiated. The test is probably best terminated using a VERB 36 ENTER (FRESH START). If there are any problems in the use of this procedure, all details should be forwarded to this office.

Romilly G. Gilbert

Romilly G. Gilbert

Enclosure

RGG:bgw

cc: G.L. Strait
R.N. O'Donnell
F.E. Zarse

PROCEDURE

1. Initiate SXT-NB-IMU Fine Alignment Test

VERB 92 ENTER 3 ENTER

2. Load stable member azimuth and latitude.
Load indicator for continuous earth rate compensation.

VERB 06 NOUN 41 FLASHES

VERB 21 NOUN 01 ENTER 02512 ENTER 0 ENTER (EROPTN = 0)

VERB 06 NOUN 41 FLASHES

VERB 24 ENTER +00000 ENTER +XXXXX ENTER
(+XX.XXX SIM LAB latitude)

VERB 06 NOUN 41 FLASHES

VERB 33 ENTER (PRO)

3. Load position number, mark option, and auto optics option.

VERB 21 NOUN 97 FLASHES

3 ENTER

VERB 22 NOUN 97 FLASHES

0 ENTER

VERB 23 NOUN 97 FLASHES

0 ENTER

4. Load TARGET 1 AZIMUTH and ELEVATION

VERB 06 NOUN 41 FLASHES (R3 = 00001)

VERB 24 ENTER +05748 ENTER +00000 ENTER

VERB 06 NOUN 41 FLASHES

VERB 33 ENTER (PRO)

5. Load TARGET 2 AZIMUTH and ELEVATION

VERB 06 NOUN 41 FLASHES (R3 = 00002)

VERB 24 ENTER +01248 ENTER +00000 ENTER

VERB 06 NOUN 41 FLASHES

VERB 33 ENTER (PRO)

6. MARK on TARGET 1 requested

VERB 51 FLASHES (R1 = 00001)

VERB 24 NOUN 91 ENTER +00000 ENTER +00000 ENTER

VERB 51 FLASHES

MARK (Depress MARK Pushbutton)

VERB 50 NOUN 25 FLASHES (R1 = 00016)

ENTER

PROCEDURE (Continued)

7. MARK on TARGET 2 requested

VERB 51 FLASHES (R1 = 00002)
VERB 24 NOUN 91 ENTER +00000 ENTER +45000 ENTER
VERB 51 FLASHES
MARK (Depress MARK Pushbutton)
VERB 50 NOUN 25 FLASHES (R1 = 00016)
ENTER

8. Repeat steps 6 and 7 (slight delay).
9. Earth rate compensation initiated
Observe COMP ACT light flashing
10. Begin DAP CHECKOUT.